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ENGINEERING EVALUATION / FACT SHEET

BACKGROUND INFORMATION

Application No.:	R13-2243B
Plant ID No.:	021-00007
Applicant:	Flying W Plastics, Inc.
Facility Name:	Glenville
Location:	Glenville, Gilmer County
SIC Code:	3084
Application Type:	After the Fact Modification
Received Date:	December 8, 2010
Engineer Assigned:	Steven R. Pursley, PE
Fee Amount:	$1,000.00
Date Received:	December 10, 2010
Complete Date:	January 12, 2011
Due Date:	April 12, 2011
Applicant Ad Date:	December 16, 2010
Newspaper:	*The Glenville Democrat*
UTM's:	Easting: 516.3 km Northing: 4,310.5 km Zone: 17
Description:	Removal and replacement of an existing extruder. Addition of 3 silos, 3 loaders, 2 extruders, 2 blenders, 1 co-extruder, and a dust collector.

DESCRIPTION OF PROCESS

Flying W Plastics, Inc., manufactures extruded vinyl components from Polyvinyl Chloride (PVC) and polyethylene (PE). The changes proposed in the permit application include the replacement of an existing extruder and the addition of 3 silos, 3 loaders, 2 extruders, 2 blenders, 1 co-extruder, and a dust collector.

FACILITY OPERATIONS

Flying W manufactures PVC and PE pipe from resins prepared or manufactured by others or from reject extruded product from other extruder companies.

The facility operates two process area in four separate buildings: (1) blending and extrusion of PE; (2) grinding and blending of PVC and warehouse; (3) extrusion of PVC;

and (4) blending and extrusion of PE in two new lines being installed within a new production/warehouse building. Three additional silos store PE resin for use in the new extrusion lines. Flying W Plastics may move the new and existing blending and extrusion equipment among the four buildings as production operations are evaluated to meet customer orders. Likewise, the exact arrangement of loaders, blenders and extruders is interchangeable.

PVC Processing

The PVC raw material is normally reject PVC from the extrusion of siding or window frames by other facilities. These materials are received in totes delivered by truck. Occasionally, PVC granules are received for extrusion.

The raw material is fed into a pregrinder (30S) which chops the reject PVC material into 1/4" coarse chips. The operator that feeds each mill is within sight of the mill cyclone product discharge at all times and will cease feeding the mill if a cyclone plugs. This material is fed into a granulator (1S), and a hammermill (3S, 4S) or pulverizor (5S), which reduces the chips to an appropriate size for extrusion.

After sizing, the material is transferred to an enclosed batch mixer (8S). The material is fed into the mixer in an 8,000 lb batch and blended for 10 minutes, and then is augured into a tote. The batch time is 30 minutes.

When reject granule mixtures are received from other facilities, the granules are fed through a screener to remove extraneous materials. The granules are fed through the screener by the auger. The screened materials are transferred to a tote for extrusion.

The two PVC extruders (8S and 9S) are fed by a pneumatic conveying system from the totes. The pneumatic conveying system transfers the materials into the extruder feed hopper and vacuum loaders (27S, and 28S). The vacuum loaders are equipped with a 40 micron filter to capture the particulate matter.

Each extruder (27S, 28S) is equipped with a saw to cut the extruded vinyl. Emissions from the saws vent inside the building.

PE Processing

PE resin, the primary ingredient, is received in 1/4" chips and is transferred to one of nine storage silos (12S-17S, 59S-61S) by pneumatic truck. The silos vents do not have filters due to the size of the material received.

From the silos, the materials are pneumatically transferred to loaders (29S, 43S-46S, 52S, 66S) and enclosed mixers (18S, 19S, 35S, 52S, 54S, 63S, and 67S). The mixers are

equipped with a 40-micron filter to capture particulate matter and protect the blower mechanism.

An enclosed batch dryer (20S) is used to dry materials as necessary. The PE granules are conveyed pneumatically to the dryer.

The PE extruders (21S-25S, 31S, 32S, 65S, 68S) are fed by a pneumatic conveying system (47S-51S, 53S, 56S, 64S and 67S) from the totes. The pneumatic conveying system transfers the materials into the extruder feed hopper. The vacuum loaders are equipped with a 40 micron filter to capture the particulate matter. Five co-extruders (39S-42S, 58S) are capable of striping the extruded pipe.

Each extruder is equipped with a saw to cut the extruded vinyl. Emissions of particulate matter are captured through vacuums attached to each extruder. Emissions from the vacuums vent inside the building.

Color Additives, Wax

A portion of the pipe extruded by flying W contains additives to add color to the finished product. Most of the PE pipe is black. The MSDS indicates that the black color concentrates contain no hazardous air pollutants (HAPs). However, 5 percent or less of the pipe produced is some color other than black. Some of these color concentrates contain HAPs. In addition, lubricants are occasionally added to the pipes. Flying W Plastics has indicated that these lubricants do not contain regulated air pollutants.

SITE INSPECTION

A full on site inspection was performed on December 7, 2010 by Jesse Adkins of DAQ and found to be in violation. Flying W commenced construction without a permit. A consent order was signed on December 21, 2010 and this permit application stems from that consent order. Additionally, the writer has performed a site inspection of the facility in the past. Therefore, no site inspection was deemed necessary for this permitting action.

ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

Controlled PM emissions from the existing facility are as follows:

Source	lb/hr	TPY
Silos	1.20	5.26
Blenders	1.79	7.83
Screener, Dryer	0.33	1.41
Vacuum Loaders	0.04	0.17
Extruders	0.83	3.63
Granulators	0.29	1.26
Total	**4.48**	**19.54**

Controlled PM emissions from the new modified facility will be as follows:

Source	lb/hr	TPY
Silos	1.8	7.88
Blenders	2.11	9.23
Screener, Dryer	0.33	1.40
Vacuum Loaders	0.08	0.34
Extruders	1.16	5.08
Granulators	0.29	1.25
Total	**5.77**	**25.18**

The increase in PM emissions resulting from the modification will be 1.29 pounds per hour and 5.64 tons per year.

VOC emissions (no controls) from the existing facility are as follows:

Source	lb/hr	TPY
Extruders	0.34	1.33
Total	**0.34**	**1.33**

VOC emissions (no controls) from the modified facility are as follows:

Source	lb/hr	TPY
Extruders	0.40	1.74
Total	**0.40**	**1.74**

The increase in VOC emissions resulting from the modification will be 0.06 pounds per hour and 0.41 tons per year.

REGULATORY APPLICABILITY

STATE REGULATIONS: The following regulations apply to this facility:

45CSR7 To Prevent and Control Particulate Matter Air Pollution from Manufacturing Processes and Associated Operations.

The new equipment subject to the process weight rate based emission limitations of 45CSR7 are: Blenders 63S and 67S, and Extruder 68S(the rest of the new equipment is exempt under section 10.5 of that rule). The rule 7 emission limitation for Blender 63S is (based on a type 'a' source and a maximum process weight rate of 1,500 lb/hr) 1.8 pounds per hour. Actual controlled emissions from Blender 63S are expected to be 0.12 pounds per hour. The rule 7 emission limitation for Blender 67S is (based on a type 'a' source and a maximum process weight rate of 2,500 lb/hr) 3.0 pounds per hour. Actual controlled emissions from Blender 67S are expected to be 0.2 pounds per hour. The rule 7 emission limitation for Extruder 68S is (based on a type 'a' source and a maximum process weight rate of 2,00 lb/hr) 2.4 pounds per hour. Actual controlled emissions from Extruder 68S are expected to be 0.24 pounds per hour. Therefore, the requirements of 45CSR7 should be met.

45CSR13 Permits for Construction, Modification, Relocation And Operation of Stationary Sources of Air Pollutants, Notification Requirements, Temporary Permits, General Permits, and Procedures for Evaluation.

This modification is subject to 45CSR13 because the uncontrolled Particulate Matter emissions exceed 6 pounds per hour and 10 tons per year.

FEDERAL REGULATIONS: This facility is not subject to Subpart DDD of NSPS (because it only extrudes materials and does not polymerize them), or any NESHAP. Note that the facility is specifically not subject to either 40 CFR 61 subpart F, 40 CFR 63 Subpart J, nor would it be subject to the 40 CFR 63 Subpart DDDDDD (area source MACT for PVC production) for the same reason.

TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS

The following is taken from the engineering evaluation for permit R13-2243:

"Although it is theoretically possible for the facility to emit small amounts of HCl and vinyl chloride, through the decomposition of PVC due to high extrusion temperatures, it is estimated that no such emissions will be likely, and therefore are considered to be negligible. Temperature indicators located on the extruders will allow the applicant to monitor the extrusion temperatures on a frequent basis."

AIR QUALITY IMPACT ANALYSIS

Since the facility is a minor source no modeling was deemed necessary.

MONITORING OF OPERATIONS

The permit will require Flying W to keep the following records:

* The amount of plastic resin throughput
* The extruder melt temperature
* Visible emission checks
* The amount of each color additive used that contains any HAP.

CHANGES TO PERMIT R13-2243A

The following changes were made to permit R13-2243A:

* The permit was put into the most recent boilerplate

* Table 1.0 was updated

* Conditions 4.1.1 and 4.1.2 were updated to reflect the new emission limits.

* The material usage rates in table 4.1.3 were updated.

* The emission ID numbers in conditions 4.1.4 and 4.1.5 were updated to reflect the new equipment.

RECOMMENDATION TO DIRECTOR

Information supplied in the application indicates that compliance with all applicable regulations will be achieved. Therefore it is the recommendation of the writer that permit R13-2243B for the modification of a plastic extrusion facility near Glenville, Gilmer County, be granted to Flying W Plastics, Inc.

Steven R. Pursley, PE
Engineer

Date